

Operating Manual



ROTH-Power Supply STANDARD

2908.1

WARNING:
Please read the entire operator's manual thoroughly before operating this unit.

Warning:

Like all apparatus run by electricity these units are capable of delivering potentially lethal voltage. They should be operated only by qualified technically trained personnel. The Power Supplies from ROTH are designed for long term laboratory use and to obtain reproducible results. Please spend a few moments reading the instruction manual thoroughly.

This power supply series has been tested and found to comply with the limits for the CE regulation. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This power supply series generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this power supply series in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their expense. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. It is strongly recommended the user reads carefully the following points before this equipment is operated.

1. Read and follow carefully the manual instructions.
2. Do not alter the power supply series. Failure to adhere to these directions could result in personal and/ or laboratory hazards, as well as invalidate the equipment warranty.
3. Use a properly grounded electrical outlet of correct voltage and current handling capacity.
4. Disconnect from the power source before maintenance and servicing. Refer servicing to qualified personnel.
5. If a solution is accidentally spilled into the instrument, disconnect the grounded plug and the user must carry out appropriate procedure or contact their supplier. Replace damaged parts.
6. Do not use in the presence of flammable or combustible material as fire or explosion may result. This device contains components, which may ignite such materials.
7. Refer maintenance and servicing to qualified personnel.
8. Ensure that the system is connected to the electrical source according to the local and national electrical codes. Failure to establish a proper connection may create a fire or shock hazard.
9. Ensure the appropriate used materials and correct operation to avoid possible hazards of explosion, implosion or release of toxic or flammable gases arising from the materials being heated.

Please verify, that you received the unit completely and without any damage. Any faults or losses have to be reported to ROTH immediately. ROTH can not accept responsibility for goods, that were sent back without informing them.

Please take a look at the packing list and check whether all components and accessories are present.

Please retain all packaging material until the warranty period has expired.
For further information, please contact us at Tel.: 0721/5606-0.

SAFETY INFORMATION

Use high level precautions against any electrical device. Before connecting with the electrical supply, check the supply voltage is within the range stated at the rating label, and that this device is earthed. Place the unit in a safe and dry location not touching any surrounding material. Follow safety precautions for chemicals and dangerous materials. If needed, please contact us at Tel.: 0721/5606-0.

Avoiding Electrical Shock

Follow the guidelines below to ensure safe operation of the unit.

The Mini power supply series has been designed for use with insulated wires, minimizing any potential shock hazard to the user. We recommend against the use of uninsulated wires.

To avoid electrical shock:

1. In case of spillage, any parts of the cable or power supply must be dried out for a period of time and restored to NORMAL CONDITION before the operation.
2. NEVER connect or disconnect wire leads from the power jacks when the red indicator light at the Start/Stop key is on.
3. WAIT at least 5 seconds after stopping a run before handling output leads or connected apparatus.
4. ALWAYS make sure that hands, work area, and instruments are **dry** before making any connections or operating the power supply.
5. ONLY connect the power cord to a proper 3-pronged grounded AC outlet, using the power cord provided with the power supply.

Avoiding Damage to the Instrument

1. Do not attempt to operate the device if damaged.
2. Protect this unit from physical damage, corrosive agents and extreme temperatures (direct sunlight etc).
3. For proper ventilation, leave at least 10 cm of space behind the instrument, and at least 5 cm of space on each side.
4. Do not operate the Power Supply in high humidity environments (> 95%), or where condensation may occur.
5. When the power supply series is taken into a cold room environment, the unit can be operated immediately. However, when the power supply series is removed from the cold room environment, let the unit equilibrate to room temperature for a minimum of 2 hours before using it.
6. Before using any cleaning or decontamination method except those recommended by the manufacturer, users should check with us that the proposed method will not damage the equipment.

Equipment Operation

Follow the guidelines below to ensure safe operation of the unit:

1. The displayed figure must be checked to see if it is in the normal condition for use before using this unit.
2. NEVER access any HAZARDOUS LIVE parts.

Symbols

The following symbol is used on the Power Supplies:



Used on the Power Supply to indicate an area where a potential shock hazard may exist.

Used on the Power Supply to indicate a warning. Consult the manual to avoid possible personal injury or instrument damage.

TECHNICAL DATA

Power Supply	MINI	STANDARD	BLOT
Model	nanoPAC-300	CS-300V	CS-3AP
Voltage (V)	10-300	2-300	5-300
Max. intensity of current	400 mA	700 mA	3000 mA
Max. output	60 W	150 W	300 W
Timer	1-999 mins	1-999 mins	1-999 mins
Volt-hours	49.995 kWh		
Display	LED display	LCD display	Matrix display
Resolution	1 V, 1 mA	1 V, 1 mA	1 V, 10 mA, 1 W
Output type	Constant V or mA	Constant V or mA	Constant V, mA or W
Programs	x	x	16 files with 6 parameters each
Outlets: parallel socket pairs			
	2 (4 mm)	4 (4 mm)	4 (4 mm)
Min. load resistor	5 Ω	3 Ω	0.1 Ω
Safety	'No load' detection, over-voltage, over-current, over-temperature protection	'No load', leakage and overload detection, over temperature protection	'No load', leakage and overload detection, over temperature protection
Ambient temp.	15-40 °C	4-40 °C	4-40 °C
Dimensions (cm) (WxLxH)	14 x 19 x 8.4	19 x 30.5 x 9.5	19 x 30.5 x 9.5
Weight	1.0 kg	2.5 kg	2.5 kg
Current	220 V		

Environmental Conditions

Ensure the instrument is installed and operated strictly in the following conditions:

- RH $\leq$ 95 %
- 75 KPa-106 Kpa
- Altitude not to exceed 2000 meters
- Ambient temperature of 15 °C (only MINI) or 4 °C (STANDARD and BLOT) in minimum. 40 °C in maximum

Maintenance

The ROTH-Power Supplies require little maintenance to ensure reliable operation. The housing may be cleaned with a dry cloth.

All Roth products available for delivery have undergone rigorous quality controls.

PACKING LIST

<u>No. Items</u>	<u>Description</u>
1	Power Supply
1	Power Cord
1	Extra fuse inside power plug on the rear of the unit
1	Instruction manual

DESCRIPTION

ROTH-Power Supply STANDARD is a microprocessor-controlled power supply designed to meet most electrophoresis needs in a personal, single, easy to use unit. The power supply is capable of running DNA/RNA electrophoresis, Electrophoretic transfer, SDS-PAGE, native PAGE applications, and second-dimension SDS-PAGE applications. Furthermore, the powerful specifications plus four pairs of terminator pairs can be used for multi electrophoresis units simultaneously.

OPERATION

Front Control Panel

1.  **Key** -- to increase either Voltage or Current or Time value
2.  **Key** - to decrease either Voltage or Time value
3.  **Key** – to activate or stop the unit
4.  **Key** – to temporarily interrupt power to an operation in progress without terminating electrophoresis and to resume power after pausing without resetting the timer.
5.  **Key** – to select Voltage value
6.  **Key** – to select Voltage value
7.  **Key** – to set or select Timer mode

Installation Instructions

Place on a sturdy and level surface in a safe, dry place, and connect with a buffer filled electrophoresis system.

Operation Instructions

Note: To operate under constant voltage or constant current modes, adjust the other parameter to the maximum value.

1. Place the power supply on a sturdy and level surface in a safe, dry place, away from laboratory traffic.
2. Ensure that the AC power switch is OFF, and then plug the three-pronged power cord into a grounded three-prong AC outlet of the appropriate voltage (110 V to 240 V as indicated on the rating sticker near the AC cord on the back of the unit).
3. Turn the AC power ON by the switch on the rear of the machine.
4. Connect the DC output jacks from the electrophoresis unit; insert the red lead (+) into the red output jack, and the black lead (-) into the black output jack.

5. Press  Key, and then press  Key or  Key to select the suitable voltage. In case the current is used to regulate the run, please set voltage to maximum.

Alternatively:-

6. Press  Key, and then press  Key or  Key to select the suitable current. In case the voltage is used to regulate the run, please set current to maximum.

7. Press  Key, and then press  Key or  Key to adjust timer (minute) upon your request if setting time is required. It will auto stop when the timer is up. When the timer is up, an alarm rings that may be stopped by pressing the START/STOP Key. In case this alarm is not wanted or if the time of the run cannot be determined in advance, **set time to "0" for continuous run**. The run is then finished by the user by pressing the START/STOP Key.

8. Press  Key to start the run. The LED is lit.

9. Press  Key to temporarily interrupt the run if necessary. The LED is lit.

10. Press  Key again to stop the unit at any time if necessary.

11. When the run is completed, Press  Key to terminate a timed run, and turn the AC power OFF by the switch on the rear.

Encountering Problems

1. Check the troubleshooting section.
2. Call Technical Service under 0049 721 5606-0
3. If the unit must be shipped back for repair, contact Carl Roth GmbH + Co. KG for shipping instructions. The unit will be repaired or replaced as quickly as possible and returned to you.
Contact: Phone 0049 721 5606-0; Fax 0049 721 5606-149; info@carlroth.de

Troubleshooting

Many operating problems may be solved by carefully reading and following the instructions in this manual. Some suggestions for troubleshooting are given below. Should these suggestions not resolve the problem, contact the SERVICE DEPARTMENT or a distributor in your region for assistance. If troubleshooting service is required, please include a full description of the problem.

Problem	Cause	Solution
No Display / lights	No AC power	Check if Mini power supply is unplugged, or if there is an AC power source problem
	AC power cord is not connected	Check AC power cord connections at both ends. Use the correct cords.
	The fuse has blown	Replace the fuse
Repeated fuse broken	Hardware failure	Contact our service department
Operation stops with alarm: The screen displays nld	Electrophoresis leads are not connected to the power supply or to the electrophoresis unit(s), or there is a broken circuit in the electrophoresis cell	Check the connections to the power supply and on your electrophoresis cell to make sure the connection is intact; check condition of wires in electrophoresis unit. Close the circuit by reconnecting the cables. Press START/STOP to restart the run.
	High resistance due to tape left on a pre-cast gel, incorrect buffer concentration, or incorrect buffer volumes in the electrophoresis cell	Correct the condition by making sure the tape is removed from the pre-cast gel, buffers are prepared correctly, and the recommended volume of buffer is added to the electrophoresis unit.
	High voltage application is set to run on a very low current	DISABLE No Load alarm on the Display Screen

Error Messages

Err1 ; power supply stops; alarm sounds.	Current exceeds setting	- Check that the correct running buffer and buffer concentration have been used - Check that cables are connected properly - Switch power on / off and then restart application - If the power supply cannot be restarted, disconnect the power supply from the mains outlet and contact Technical Service
Err2 ; power supply stops; alarm sounds.	Voltage exceeds setting	- Check that the correct running buffer and buffer concentration have been used - Check that cables are connected properly - Switch power on / off and then restart application - If the power supply cannot be restarted, disconnect the power supply from the mains outlet and contact Technical Service
Err3 ; power supply stops; alarm sounds	Groundleak detection	- Switch power off. Check electrophoresis system for earth leakage. - Switch power off / on and restart application
Err6 ; power supply stops; alarm sounds	Power supply is overheating	- Turn off power supply immediately and check that there is adequate clearance around the power supply for even ventilation. - If the power supply cannot be restarted, disconnect the power supply from the mains outlet and contact Technical Service

Err7 ; power supply stops; alarm sounds	Poor connection between power cable and power supply; damaged power cable or electrode	- Check power cables and electrodes within the gel tank
A59 ; power supply stops; alarm sounds with countdown to zero: A58, A57 etc.	Countdown before power supply restarts	- Ensure that electrophoresis conditions for system are correct, without compromising personal safety.

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